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# The Illustrated Dictionary of Electronics

Fifth Edition

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Exhibit 7

transmitter-receiver • TR cavity

**transmitter-receiver** A separate transmitter and receiver housed together. *Compare* TRANSCEIVER.

**transmitting antenna** An antenna designed expressly for the efficient radiation of signals into space.

**transmitting station** A station that only transmits signals, i.e., it engages in no official form of reception. *Compare* RECEIVING STATION.

**transmittivity** The degree to which a selective circuit transmits a desired signal. *Compare* REJECTIVITY.

**transmultiplexer** A device that changes a signal from one multiplexed form to another while maintaining all of the information contained in the signal. For example, a transmultiplexer might convert time-division-multiplex data to frequency-division multiplex or vice-versa.

**transonic** Equal to, or approximating, the speed of sound in air (approximately 1087 ft per sec).

**transparency** The practically unimpeded transmission of radiation, such as light, through a material. *Compare* OPACITY and TRANSLUCENCE.

**transponder** A combination transmitter-receiver that automatically transmits an identification signal whenever it receives an interrogating signal. The term is an acronym for transmitter and responder.

**transport** *See* TAPE TRANSPORT.

**transportable equipment** Portable electronic equipment. *See, for example,* PORTABLE TRANSMITTER.

**transpose** In solving equations, to move a term to the other side of the equal sign and then necessary changing of its sign, e.g.,  $a + b = c$  is equivalent to  $a = c - b$ .

**transuranium** An element whose atomic number is higher than that of uranium.

**transverse** Occurring in a direction or directions perpendicular to the direction of propagation.

**transversal** A line that intersects other lines (geometry).

**transverse electric mode** In a waveguide, the mode of propagation when the electric lines lie across the guide, i.e., perpendicular to the direction of transmission. *Compare* TRANSVERSE MAGNETIC MODE. *Also see* WAVEGUIDE MODE.

**transverse electromagnetic wave** An electromagnetic wave having electric-field vectors and magnetic-field vectors perpendicular to the direction of propagation.

**transverse magnetic mode** In a waveguide, the mode of propagation when the magnetic lines lie across the guide, i.e., perpendicular to the direction of transmission. *Compare* TRANSVERSE ELECTRIC MODE. *Also see* WAVEGUIDE MODE.

**trap** 1. Wavetrap. 2. In a semiconductor crystal, an imperfection capable of trapping current carriers.

**trapezoid** 1. A polygon having four sides, of which only two are parallel. 2. Trapezoidal pattern. 3. Trapezoidal wave.

**trapezoidal distortion** In television or facsimile, a form of distortion in which the frame is wider at the top than at the bottom, or vice-versa.

**trapezoidal pattern** An oscilloscope pattern used to check the percentage of modulation of an AM wave. It is so called from its trapezoidal shape.

**trapezoidal wave** A nonsinusoidal wave which is a combi-

nation of a rectangular component and a sinusoidal component. It is the required waveform coupled to a magnetic deflecting coil (oscilloscope) to assure a sawtooth wave of current in the helix.

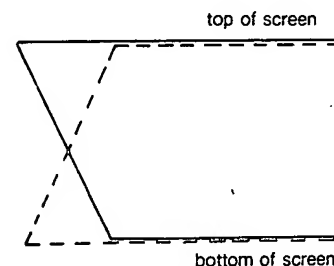
**traveling-wave amplifier** Abbreviation for traveling-wave tube. Based upon the unique operating characteristics of the wave tube.

**traveling-wave tube** Abbreviation, TWT. A tube containing an electron gun, helix, collector, and input and output waveguide. A wave signal is coupled into the helix while the gun projects an electron beam along the helix. When wave and electron interact, power gain is obtained in the signal. *Also see* BACKWARD-WAVE OSCILLATOR.

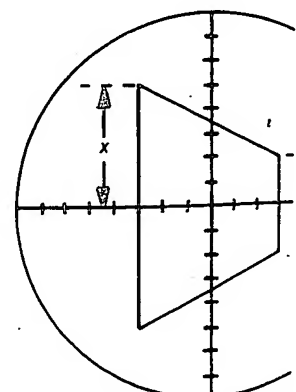
**Travis discriminator** A discriminator circuit in which diodes are operated from separately wound secondary windings of the input transformer. *Compare* FOSTER-SEELEY DISCRIMINATOR.

**TR box** *See* TRANSMIT-RECEIVE TUBE.

**TR cavity** The resonant cavity in a traveling-wave tube. *Also see* RESONANT CAVITY.



TRAPEZOIDAL DISTORTION



$$\text{modulation (\%)} = 100 \left( \frac{x}{X} \right)$$

TRAPEZOIDAL PATTERN

# resonant frequency • rev

**resonant frequency** Symbol,  $f_r$ . The NATURAL frequency at which a circuit oscillates or a device vibrates. In an LC circuit (series-resonant or parallel-resonant), inductive and capacitive reactances are equal at the resonant frequency.

**resonant-gate transistor** A transistor embodying a tiny tuning fork for resonance at low frequencies, thus eliminating bulky coils and capacitors.

**resonant line** A transmission line that is resonant at the operating frequency.

**resonant-line amplifier** See LINE-TYPE AMPLIFIER.

**resonant-line circuit** A circuit employing resonant lines as a tank. See, for example, LINE-TYPE AMPLIFIER and LINE-TYPE OSCILLATOR.

**resonant-line oscillator** See LINE-TYPE OSCILLATOR.

**resonant-line wavemeter** See LECHER FRAME.

**resonant rise** See VOLTAGE RISE.

**resonant-slope amplifier** See DIELECTRIC AMPLIFIER.

**resonant-slope detector** See SLOPE DETECTOR.

**resonant suckout** The drawing of RF energy out of the used part of a coil or transmission line by the unused part when the latter resonates at the same frequency.

**resonant-voltage rise** See VOLTAGE RISE.

**resonant-voltage stepup** See VOLTAGE RISE.

**resonator** A device that produces or undergoes resonance. See, for example, HELMHOLTZ RESONATOR and RESONANT CAVITY.

**resource** A part of a computer system that can be used for a specific application as a unit, e.g., a peripheral.

**responder** The transmitting section of a transponder.

**response** The behavior of a circuit or device (especially in terms of its dependent variables) in accordance with an applied signal, e.g., frequency response.

**response curve** A graph depicting the performance of a circuit or device. A common type is a current versus voltage curve.

**response time** The interval between the instant a signal is applied to or removed from a circuit or device and the instant the circuit acts accordingly.

**restart** Following a malfunction or error occurring during a computer program run, to go back to an earlier point in the program.

**resting state** See QUIESCENT STATE.

**restore** See RESET.

**resultant** 1. The vector that results from the addition of two or more vectors. 2. A quantity that results from mathematical operations performed on other quantities.

**retarding-field negative resistance** Negative resistance occurring in a properly biased pentode as a result of negative transconductance. The effect is so called because of the retarding field produced by the suppressor.

**retarding-field oscillator** See BARKHAUSEN-KURTZ OSCILLATOR.

**retarding magnet** See DRAG MAGNET.

**retentivity** Symbol,  $n$ . The property whereby a material retains magnetism imparted to it.

**retention period** In computer practice, the time during which the information on a reel of magnetic tape must be kept intact.

**reticle** As seen through the eyepiece of an optical instrument, a reference pattern (e.g., crosshairs) for gauging size or distance.

**RETMA** Radio-Electronics Television Manufacturers' Association. (One of the ancestors of the Electronic Industries Association.)

**retrace** 1. In an oscilloscope tube or TV picture tube, the return of the scanning beam to its starting point. 2. The line traced on the screen by a retracing beam (see 1, above).

**retrace blanking** Obliteration of the return trace of the electron beam in an oscilloscope tube or TV picture tube, to make the retrace line invisible on the screen. Also see BLANK, 2 and RETRACE, 2.

**retrace line** See RETRACE, 2.

**retrace ratio** For the swept beam in a cathode-ray tube, the ratio of the scanning velocity in one direction to the scanning velocity in the other direction (retrace). Also see RETRACE, 1, 2.

**retrace time** The time required for an electron beam to return to the starting point of a scan. Also see RETRACE, 1, 2.

**retrofit** To supply something with specially designed or adapted parts that weren't available when it was made.

**retrograde orbit** An orbit that is from east to west around the earth. Generally, the actual satellite motion is from west to east. If the satellite is more than about 22,500 miles from the earth, the satellite will appear to go from east to west, even though its actual motion is from west to east. This is simply because the satellite period is more than 24 hours. This would not be a true retrograde orbit.

**return** 1. Retrace. 2. Return circuit. 3. Return point. 4. In an electronic circuit, ground and the ground path.

**return circuit** The circuit through which current returns to a generator.

**return instruction** In a computer program, an instruction in a subroutine directing operation back to a specific point in the main program.

**return interval** In an oscilloscope or television cathode-ray tube, the amount of time required for the scanning beam to move from the end of one trace or line to the beginning of the next.

**return line** See RETRACE, 2.

**return point** 1. The point to which circuits are returned, e.g., a common ground point. 2. The terminal point of a return circuit.

**return ratio** In a feedback system, the feedback factor.

**return time** See RETRACE TIME.

**return to zero** 1. Abbreviation RZ or RTZ. In the magnetic recording of data, a method in which the write current returns to zero following the write pulse. Compare NONRETURN-TO-ZERO. 2. A logic system in which the zero and one states are represented by zero voltage and a discrete voltage.

**return trace** See RETRACE, 1, 2.

**REV** 1. Abbreviation of REENTRY VEHICLE. 2. Abbreviation of REVERSE.

**rev** 1. Abbreviation of revolution. 2. To quickly and substantially increase the angular velocity of a rotating body.